Needs and Solutions for Energy/Water Issues

Group A

Stephanie Tanner

Need: Thermal cooling

- Improve Water Use Efficiency and maximize energy use per gallon.
- Speed adoption of new technology
- Use Lower Quality Water
- Avoiding/Reducing Water use through disperse generation
- Use of waste heat to reduce cooling
- Tech transfer of cooling technologies to buildings
- Define terms/characterize technology
- Impact of 1C increase in temp by 2050 on cooling and demand.

- Goal – Under the hydrogen economy use the same amount of water to produce power as used today.

Need - Hydropower

- Build water allocation models
  - Forecasting model
  - Operational model
- Evaluate change in water flows as a function of climate change
- Monitoring network to supply data needs.

Need – Population growth

- Substate model projections.
- Data suitable for modeling
- Models of building water use like DOE-2
- All models need to be developed with the end users to help gain acceptance.

Need – Carbon Sequestration

- Impacts of Sequestration on Water
  - Reinjection impact on groundwater
  - Beneficial uses (forests).
- Water Needs for Sequestration?
  - Quality, quantity, and locations.

Need – Water Laws

- Regional (watershed) level instead of by state.
- National water policy on selected issues.
- Improved water laws on interstate issues.
- Compile existing water laws.
- Adaptive management approach
- National water commission
- Unified forum for addressing water/energy needs.

Need – In-stream use

- Metrics to value different uses.
- Impacts of climate change
- Technologies to deal with extremes (pumped storage, aquifer storage and recovery, reservoirs)
- Legal aspects
- New models for decision support

Need – Aging infrastructure

- Asset management approach
- Quantify water/energy impacts of leaking pipes (including infiltration into waste treatment pipes).

Solutions – Instream uses

- Data to quantify instream uses (seasonal).
- Upgrade /coordinate instream requirements.
- Evaluation of instream requirement.
- Comparable metrics
- Management of instream uses (real –time data).
- Legal issues – water rights, absolute requirements, interstate issues, original purposes vs. new purposes
- Technology to deal with extremes (produced water, aquifer storage and recovery)
- Evaluate impacts of climate change

Solutions –

- Data evaluation. Water quality, flow, depth, QA, infrastructure to handle data that is GIS capable.
- Ongoing Data sharing/cooperation.
- Coordination across data and modeling into a response.
- Clearing house, web links to share data.
- Model to determine data needs.

Solutions

- Technology Adoption
  - Petroluem tech transfer approach.
  - Involve all users including equipment suppliers.
  - Tech demonstration.
  - Environmental Technology Verification Model

Solutions

- Pricing mechanisms and signals. Both water and electric side.
  - Low income support
  - Feedback response for price signals (automatic meter reading)
  - Value of reducing peak in water use.
  - Benchmarking tools and value analysis

Solutions

- Climate change impacts
  - Impacts on changes in climate on energy/water solutions.
  - Sensitivity analysis
  - Insurance industry connection for risk management.

Solutions – Aging Infrastructure

- Funding Mechanisms
- Asset management approach
- Leak detection – Water Loss audit